

Assessment of knowledge level about patents, biosafety regulations and risk assessment among stake holders

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Abstract: Concepts like transgenics, genetically modified food, patents, farmer's rights, geographical indicators in vogue under the WTO regime are supposed to be understood by various stake holders. It has been observed that majority of these state holders are not familiar with concepts and their implications. A study was conducted to assess this situation. Respondents were classified into three categories as those having absolutely no idea, moderate idea and fairly good idea about various aspects. Statistical tools like percentages, averages, standard deviation and chi square (X^2) test were used to analyze the data. With regard to level of awareness about patent about 53 per cent of agricultural scientists had only moderate idea and 40 per cent had good idea. Percentage of students with no idea and moderate idea was equal at about 37 per cent each. About 21 per cent of students had good knowledge about patents and related aspects. With regard to awareness about bio-safety regulations half of the scientists expressed that they had good idea followed by those with moderate (30 %) and no idea (20%). Percentage of students with moderate knowledge about bio-safety was more (47 %) when compared to those with fairly good idea (30) and those with no idea (23). Level of awareness about risk assessment among the respondents was highest among scientists with 57 per cent having good idea, while about 27 per cent had moderate knowledge and 17 per cent had no idea. Majority of the students had moderate idea (43%) while 30 per cent of them had good idea and 27 per cent had no idea. Extent of awareness about these parameters was poorest among farmers. Therefore, aspects relating to transgenics, patents, bio-safety and risk assessment should be included in the Under Graduate syllabus. Village awareness campaigns by KVKs and similar public and private organizations and the NGOs need to be encouraged.

Key words: Transgenics, patents, biosafety regulations, risk assessment

Introduction:

With the advent of WTO and its related issues on the world economic scenario and especially in the agrarian sector various legal terminologies have been in vogue. These are various concepts like transgenic, genetically modified foods, patents, farmer's rights, geographical indicators and many more. These are certainly technical terms but which have direct bearing on the life of common man and particularly the farmer. They are supposed to be understood by various stake holders in the matter. But, it has been generally observed that majority of people are not familiar with these concepts and their implications. Even the academicians are not well versed with respect to some of these aspects. There has been a lot of debate on these matters in the parliament, public and the press but unfortunately they have not created the kind of awareness they should have created. This is a matter of concern for the policy makers as well as for practitioners in the field.

Material and methods

In view of this situation a study was conducted to know the extent of awareness about patents, bio-safety regulations and risks related to production and use of transgenic among the various stake holders.

A sample of 30 agricultural scientists and an equal number of agricultural students and farmers was selected to elicit information on extent of awareness. Agricultural scientists and students were randomly selected from College of Agriculture, Regional Agricultural Research Station and Krishi Vignan Kendra, Bijapur coming under the jurisdiction of University of Agricultural Sciences, Dharwad. Farmers from Hitnalli, Jumnal,

Muttagi and Utal villages of Bijapur district were randomly selected and the data pertained to 2006.

A set of questions related to patents, bio-safety regulations and risk assessment concerned to transgenic and related aspects were framed in consultation with experts in the field of transgenic research. Respondents were classified into three categories as those having absolutely no idea, moderate idea and fairly good idea about various aspects. Simple statistical tools like percentages, averages, standard deviation and chi square (X^2) test were used to analyze and interpret the data (Rangaswamy, 2002).

Transgenic or genetically modified organism (GMO) is an organism whose genetic material has been altered using genetic engineering techniques.

A patent is a set of exclusive rights granted by a state (national government) to an inventor or their assignee for a limited period of time in exchange for a public disclosure of an invention.

Biosafety regulation means regulation governing safety from exposure to infectious agents.

In biotechnology language, risk assessment is characterization of potential adverse effects on the environment or human health posed by Genetically Modified Organisms.

Results and discussion

With regard to level of awareness about patent and its related aspects the findings of the study revealed that about 53 per cent of agricultural scientists had only moderate idea and 40 per cent had good idea (Table 1). There were very few scientists with poor knowledge (7%). The percentage of students with no idea and moderate idea was equal at about 37 per cent each.

Table 1. Awareness about patents, biosafety regulations and risk assessment among different category stake holders

Category	No idea	Moderate idea	Fair idea	Total
I. Level of awareness about patents among different stake holders.				
Scientists	02(6.67)*	16(53.3)	12(40)	30(100)
Students	11(36.67)	11(36.67)	08(20.67)	30(100)
Farmers	27(90)	03(10)	00(00)	30(100)
II. Level of awareness about bio-safety regulations among different clients.				
Scientists	06(20)	09(30)	15(50)	30(100)
Students	07(23.33)	14(46.67)	09(30)	30(100)
Farmers	28(93.33)	02(6.67)	00(00)	30(100)
III. Level of awareness among different clients for risk assessment.				
Scientists	05(16.67)	08(26.67)	17(56.67)	30(100)
Students	08(26.67)	13(43.33)	09(30)	30(100)
Farmers	29(96.67)	01(3.33)	00(00)	30(100)

* Figures in parentheses indicate percentage to the totals

About 21 per cent of students had good knowledge about patents and related aspects. It was noticed in the study that these students having good knowledge belonged to higher classes of Undergraduate programme. With respect to farmers who are the ultimate beneficiaries, the finding was that ninety per cent of farmers had no idea what so ever about patent and related aspects.

With regard to awareness about bio-safety regulations 50 per cent of scientists interviewed expressed that they had good idea followed by those with moderate (30 %) and no idea (20%). Percentage of students with moderate knowledge about bio-safety was more (47 %) when compared to those with fairly good idea (30) and those with no idea (23). Again 93 per cent of farmers had no idea about bio-safety regulations.

The level of awareness about risk assessment among respondents was highest among scientists with 57 per cent having good idea, while about 27 had moderate knowledge and 17 per cent no idea. Majority of the students had moderate idea (43%) while 30 per cent of them had good idea and 27 per cent had no idea. The extent of awareness was poorest among farmers with 97 per cent of the farmers having no idea about risk assessment.

Based on the survey data chi-square test was used to test the degree of association between the level of awareness about patents, biosafety regulations and risk assessment and attributes like status, age and the academic level. Various hypotheses were formed and tested for their validity.

With respect to association between level of awareness about patents and the status of the respondents (scientists, farmers and students) chi square value (Table-2) was found to be significant at one per cent level of significance. Hence, the null hypothesis that there was no association between these attributes was rejected and the alternative hypothesis that there was significant association between the status of the respondents and their level of knowledge was accepted.

With regard to the status of the respondents and their level of knowledge regarding bio-safety regulations the chi-square value was found to be significant at one per cent level of significance thereby validating the alternative hypothesis that the status of respondents had significant influence on the level

Table 2. Association between knowledge level and status of the respondents

I	Knowledge level about intellectual property rights				X ² value
	Low	Medium	High	Total	
Scientists	02	16	12	30	43.86**
Students	11	11	08	30	
Farmers	27	00	00	30	
Total	40	30	20	90	
II	Knowledge level about bio safety				X ² value
	Low	Medium	High	Total	
Scientists	06	09	15	30	42.68**
Students	07	14	09	30	
Farmers	28	02	00	30	
Total	41	25	24	90	
III	Knowledge level about risk assessment				X ² value
	Low	Medium	High	Total	
Scientists	05	08	17	30	51.03**
Students	08	13	09	30	
Farmers	29	01	00	30	
Total	42	22	26	90	

** Significant at 1% level.

N = 90

of awareness about bio-safety regulations. Similarly, the status of respondents had significant influence on the level of awareness about risk assessment.

Chi-square test was conducted to know the association between age of the respondents and the level of awareness about patents, bio-safety regulators and risk assessment (Table-3). The fact that the age factor had significant influence on the level of awareness among respondents about patents was validated by the chi-square value significant at one per cent level of significance. On the contrary, the age of the respondent had no significant influence on the level of awareness about bio-safety regulators and risk assessment as indicated by the chi-square value at one per cent level of confidence.

The poor level of awareness among the most important stake holders reflects poorly upon efforts to create awareness among them. As we are claiming that knowledge is power in today's world, we are witness to great amount of ignorance too. Therefore, efforts are needed to take the issue to the doors of the farmers

Table 3. Association between knowledge level and age of the respondents N = 60

I	Knowledge level about intellectual property rights				X ² value
	Low	Medium	High	Total	
Young	10	02	01	13	13.53**
Middle	13	11	09	33	
Old	04	08	02	14	
Total	27	21	12	60	
II	Knowledge level about bio-safety				X ² value
	Low	Medium	High	Total	
Young	09	02	02	13	3.95 NS
Middle	14	08	11	33	
Old	06	05	03	14	
Total	29	15	16	60	
III	Knowledge level about risk assessment				X ² value
	Low	Medium	High	Total	
Young	10	01	02	13	3.11 NS
Middle	17	09	07	33	
Old	08	04	02	14	
Total	35	14	11	60	

** Significant at 1% level of significance

and villagers directly. The researchers had the experience of taking the debate to the doors of the villagers where there was good response. ICAR and the Government of India have been making efforts to spread the message but results are not encouraging. Therefore, the results of the present study clearly bring about the seriousness of the matter and hence efforts must be stepped up to campaign for the same. Village Awareness Campaigns by the KVK and similar institutions of both public and private sector involved in agricultural research and development, farmers' organizations and the NGOs should be identified and entrusted with the responsibility for immediate effects. Arya and Kumar (2003) in a similar study highlighted the need for dissemination of information on IPR through mass media and literature.

As already stated the level of awareness among student community was fairly better than that of farmers. But, whether their level in the under graduate programme had an influence on degree of knowledge or not was the question. Therefore, it was also tested whether the academic level of Under Graduates students had any influence on the level of awareness about the attributes (Table-4). It was found that the level of students

Reference

Arya Vidyasagar, P. and Kumar Praduman, 2003, Awareness on intellectual property rights: A case study of India., Agric. Econ. Res. Rev., 16(1): 60-74.

Table 4. Association between knowledge level of the students and their academic class

I	Knowledge level about intellectual property rights				X ² value
	Low	Medium	High	Total	
I	05	01	01	07	24.34**
II	06	03	01	10	
III	01	05	00	06	
IV	00	00	07	07	
Total	12	09	09	30	
II	Knowledge level about bio-safety				X ² value
	Low	Medium	High	Total	
I	02	03	02	07	5.33 NS
II	03	04	03	10	
III	02	04	00	06	
IV	07	13	10	30	
III	Knowledge level about risk assessment				X ² value
	Low	Medium	High	Total	
I	06	01	00	07	24.66**
II	04	05	01	10	
III	02	02	02	06	
IV	00	00	07	07	
Total	12	08	10	30	

Df = (C-1)(r-1)=(3x2) = 6

** Significant at 1% level of significance

NS= Non significant

(academic class) in the UG programme had significant influence on the level of awareness about patents and risk assessment as validated by the highly significant chi-square value. The students were found to have gained higher level of knowledge and especially those students in senior classes were having greater knowledge than the juniors. This validated the fact that exposure to formal training has really had significant influence on the level of knowledge. This calls for inclusion of syllabus relating to transgenics, patents, bio-safety and risk assessment in the under graduate level. Therefore, ICAR, the premier policy making body in agriculture education in the country can ensure this while modifying the undergraduate syllabus in the periodic Dean's Committee Reports on reorientation of syllabus. As Arya and Kumar (2003) argued in favour of integrating IPR issues into education and Research and Development programmes, agricultural degree programme need to strengthen these aspects in the syllabus.

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